REMARKS

Claims 1-24 are all the claims pending in the application. Applicant thanks the Examiner for indicating that claims 12 and 15-17 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form. Applicant rewrites these claims into independent form so as to place them in condition for allowance.

Claims 1-7, 9-11, 13, 14, and 20-24 are rejected under 35 U.S.C. § 102(b) as being anticipated by or, in the alternative, under 35 U.S.C. § 103(a) as obvious over Heinen (6,415,835).

Claims 1-10, 13, 14, 18 and 20-24 are rejected under 35 U.S.C. § 103(a) as being unpatentable over JP 3-57704 (Japan '704) in view of at least one of EP 820885 (Europe '855), JP 7-186633 (Japan '633) and GB 565477 (Great Britain '477).

Claim 19 is rejected under 35 U.S.C. § 103(a) as being unpatentable over JP 3-57704 (Japan '704) in view of at least one of EP 820885 (Europe '855), JP 7-186633 (Japan '633) and GB 565477 (Great Britain '477), and further in view of JP 3-86605 (Japan '605).

Analysis

Of the rejected claims, only claim 1 is in independent form; therefore, the following discussion is initially directed to this independent claim.

Regarding the rejections under 35 U.S.C. 102(b) or 103(a) by/over Heinen, Applicant respectfully submits that the smaller grooves in the present invention extend in the longitudinal direction only; in contrast, Heinen extends the grooves in both the transverse and longitudinal directions.

There is no teaching or suggestion for modifying Heinen to have the smaller grooves extend only in the longitudinal direction, therefore, claim 1 is patentable over Heinen.

Regarding the rejection under 35 U.S.C. 103(a) over Japan '704 in view of at least one of EP '885, Japan '633, GB '477 and JP '605 stated in paragraphs 4 and 5 of the outstanding Office Action, Applicant submits the following remarks.

First, the object of Japan '704 is to provide "core portions" at a groove wall surface (12A, 14A), so that water present in the vicinity of the groove wall surface, which tends to stay there (in the vicinity of the groove wall surface) in a form of vortexes, is quickly detached from the groove wall surface and smoothly drained.

In order to achieve this object, Japan '704 proposes provision of projected lines (22), dented lines (26), or dents (18), which each function as the core portions, at a groove wall surface. In Japan '704, the core portions may be any of a projected line, a dented line and a dent. Needless to say, a projected line and a dent are completely different from, and thus irrelevant to, the small grooves of the present invention.

With regards to a dented line (26) of Japan '704, note that the dimension of the dented line must be relatively *large* (the width thereof is to be within a range of 0.5 to 2 mm, inclusive of 0.5 and 2 mm, claim 6 of Japan '704) in order to achieve the above-described object, i.e., to facilitate separation of vortexes, generated in the vicinity of a groove wall surface, from a groove wall surface. In this regard, the Examiner's assertion that "Japan '704 suggests increasing the number of smaller grooves and correspondingly decreasing the pitch of the smaller grooves to

increase water drainage capacity" (the second last line of page 3 to the first line of page 4 of the outstanding Action), manifests a misunderstanding of the content of Japan '704.

In contrast to Japan '704, the primary object of the present invention is to decrease friction resistance (flow resistance) between water and a groove wall surface, so that water in a groove smoothly flows and is drained.

In order to achieve this object, the present invention proposes a provision of very small grooves 22 at a groove wall surface. The small grooves generate a numerous number of minute vortexes along the groove wall surface, thereby decreasing friction resistance between water and the groove wall surface (i.e., achieving the above-mentioned primary object of the present invention). Note that the dimension of the small grooves 22 of the present invention must be relatively *small* (the pitch thereof is to be set within a range of 0.01 to 0.5 mm, see claim 1 of the present application) in order to appropriately generate a numerous number of minute vortexes along the groove wall surface, i.e., to achieve, in a satisfactory manner, the primary object (to decrease friction resistance between water and the groove wall surface).

In summary,

- the object of Japan '704 is to *facilitate separation of vortexes*, generated in the vicinity of a groove wall surface, *from a groove wall surface*, thereby preventing water from staying at the groove wall surface, while
- the object of the present invention is to *intentionally generate a higher number of minute vortexes* along the groove wall surface, thereby decreasing friction resistance between water and the groove wall surface,

and due to the difference in objects between Japan '704 and the present invention, there arises a significant structural difference between the two inventions, i.e.,

- in Japan '704, the dimension of the dented line must be relatively *large* (the width thereof is to be within a range of 0.5 to 2 mm)
- in the present invention, the dimension of the small grooves 22 of the present invention must be relatively *small* (the pitch thereof is to be set within a range of 0.01 to 0.5 mm).

Thus, Applicant respectfully submits that Japan '704 is completely different from the present invention and is inappropriately applied as a reference over the present application.

Further, Applicant submits that one would not have been motivated to modify Japan '704 to arrive at the present invention.

With regards to EP '885, Japan '633 and JP '605 as the secondary references, none of EP '885, Japan '633 and JP '605 discloses or even suggests the aforementioned critical technological thought of the present invention (i.e., to intentionally generate a high number of minute vortexes along the groove wall surface, thereby decreasing friction resistance between water and the groove wall surface) and the unique structural feature resulting therefrom (i.e., provision of a plurality of smaller grooves in a groove wall, as defined in claim 1 of the present application). Therefore, any combination of Japan '704 with EP '885, Japan '633 and JP '605 would not lead one of ordinary skill in the art to the claimed invention according to claim 1.

With regards to GB '477, although it discloses smaller grooves provided at a groove wall surface which are somewhat similar to those of the present invention, the object of GB '477

(improvement of anti-skid property) is completely different from the aforementioned object of Japan '704 (i.e., to facilitate separation of vortexes, generated in the vicinity of a groove wall surface, from a groove wall surface, thereby preventing water from staying at the groove wall surface) and thus there exists no motivation to combine Japan '704 with GB '477.

Still further, one would not have been motivated to modify Japan '704 in view of GB '477, or any of the other cited references, as alleged in the Office Action, because the alleged resultant combination would render Japan '704 useless for its intended purpose. (See MPEP § 2143.01.) One of ordinary skill in the art would not have thought to combine the cited references in the alleged to result in "using a large number of such longitudinally extending smaller grooves and closely spacing the smaller grooves" (penultimate line of page 4 of the outstanding Action) because such a modification runs counter to the teachings and objectives of Japan '704, in which the dimension of the dented line (26) must be relatively large (the width thereof is to be within a range of 0.5 to 2 mm), as described above.

Accordingly, Applicant respectfully submits that the combination of cited references does not render claim 1 obvious.

The remaining rejections are directed to the dependent claims. These claims are patentable for at least the same reasons as claim 1, by virtue of their dependency therefrom.

Conclusion

In view of the above, reconsideration and allowance of this application are now believed to be in order, and such actions are hereby solicited. If any points remain in issue which the

Examiner feels may be best resolved through a personal or telephone interview, the Examiner is kindly requested to contact the undersigned at the telephone number listed below.

The USPTO is directed and authorized to charge all required fees, except for the Issue Fee and the Publication Fee, to Deposit Account No. 19-4880. Please also credit any overpayments to said Deposit Account.

Respectfully submitted,

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